Jessie De Graef
Ghent University

Analysis of ABC-transporters in *Cooperia oncophora*

De Graef J.[1], Claerebout E.[1], Vercruysse J.[1], von Samson-Himmelstjerna G.[2], Skuce P.[3], Mitreva M.[4], Geldhof P.[1]
[1]Laboratory for Parasitology, Faculty of Veterinary Medicine, Ghent University, Belgium.
[2]Institute for Parasitology, University of Veterinary Medicine Hannover, Germany
[3]Moredun Research Institute, Pentlands Science Park, Bush Loan, Penicuik, Midlothian, Scotland, United Kingdom.
[4]Department of Genetics, The Genome Center, Washington University School of Medicine, St. Louis, Missouri, United States of America.

Apart from target site alteration, anthelmintic resistance may also be mediated by mechanisms that alter the drug concentration at the sites of action. Members of the ATP-binding cassette transporter family (P-glycoproteins, Haf-transporters, Multidrug Resistant proteins) may fulfil this job. Over-expression of *ABC-transporter* genes can contribute to drug resistance in parasites. To identify ABC transporters in *C. oncophora*, we analyzed the transcriptome dataset of larval and adult life stages. We could identify homologues of *Pgp-2*, *Pgp-3*, *Pgp-9*, *Pgp-11*, *Pgp-12*, *Pgp-16*, *Haf-2*, *Haf-3*, *Haf-4*, *Haf-9*, *Mrp-4* and *Mrp-7*. By reverse-transcriptase PCR we determined that all these genes are equally expressed in all life stages (Egg, L1, L2, L3, L4, Male, Female) of *C. oncophora*. Quantitative real-time PCR's were subsequently performed to compare the mRNA transcription levels of all identified ABC's in adult worms of an ivermectin (IVM)-susceptible and an IVM-resistant isolate collected from the field. The data indicated that none of the genes had an altered transcription pattern between the two isolates. However, after exposure to IVM, *Pgp-11* transcription levels in resistant worms were significant upregulated compared to non-exposed worms. Whether *Pgp-11* is actually involved in the resistance mechanism or whether the upregulation of this gene is a result of a stress response in the worms is still unclear.